

CLAIMS:

1. An image signal processing method for processing a color component signal obtained by a solid-state image pickup device including an arrangement of a plurality of a photoelectric elements and a color filter arranged in the light receiving section of each of the pixels corresponding to the photoelectric elements, comprising the steps of:

storing a first color component signal from a designated pixel corresponding to the photoelectric element having a filter capable of passing at least green light on a line of said solid-state image pickup device in a memory device ;

storing a second color component signal from at least one pixel in the neighborhood of said designated pixel corresponding to said photoelectric element in said memory device, the neighboring pixel having a filter for transmitting at least the green light on a line different from said line; and

interpolating the value of said first color component signal based on the value of said second color component signal in an interpolation processing unit.

2. A method according to Claim 1, wherein said designated pixel is a pixel corresponding to the photoelectric element on said horizontal line, and the pixel in the neighborhood of said designated pixel includes a pixel on another horizontal line adjacent to

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said designated pixel.

3. A method according to Claim 2, wherein the average of said first color component signal of said designated pixel and said second color component signal of the pixel in the neighborhood of said designated pixel is calculated, and the value of said first color component signal is interpolated based on said average of said first and second color component signals.

4. A method according to Claim 2, wherein said solid-state image pickup device includes a Bayer arrangement pattern having pixels corresponding to the photoelectric element with a red light pass filter, a pixel corresponding to the photoelectric element with a filter capable of transmitting at least the green light and a pixel corresponding to the photoelectric element with a blue light transmitting filter, and in the case where each of said pixels can be specified by the row number m of a horizontal line and the column number n of vertical line orthogonal to said horizontal line of said solid-state image pickup device (m, n : arbitrary positive integer), assuming that the color signal component of said designated pixel having a filter capable of transmitting at least the green light on said horizontal line is given as $G_{m,n}$, the value of the color component signal of said designated pixel having a filter capable of transmitting at least the green light is determined by at least selected one of the formulae $(G_{m-1,n-1} + G_{m,n})/2$, $(G_{m+1,n+1} + G_{m,n})/2$, $(G_{m-1,n+1} +$

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$G_{m,n})/2$ and $(G_{m+1,n-1} + G_{m,n})/2$.

5. A method according to Claim 1, further comprising the step of determining the value of the green signal component in a pixel corresponding to the photoelectric element having a filter other than the one transmitting at least the green light using the value of the color component signal determined for said designated pixel corresponding to the photoelectric element having a filter transmitting at least the green light.

6. An image signal processing apparatus for processing a color component signal obtained by a solid-state image pickup device including an arrangement of a plurality of photoelectric elements and a color filter arranged in the light receiving section of each of the pixels corresponding to the photoelectric element, comprising:

a memory for storing a first color component signal from a designated pixel corresponding to the photoelectric element having a filter capable of transmitting at least a green light on a line of said solid-state image pickup device, said memory storing a second color component signal from a pixel corresponding to the photoelectric element in the neighborhood of said designated pixel, said neighboring pixel having a filter capable of transmitting at least a green light on a line different from said designated line; and

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an interpolation processing unit for interpolating the value of said first color component signal based on the value of said second color component signal.

7. An apparatus according to Claim 6, wherein said designated pixel is a pixel corresponding to the photoelectric element on said horizontal line, and said pixel in the neighborhood of said designated pixel includes a pixel on another horizontal line adjacent to said designated pixel.

8. An apparatus according to Claim 7, wherein said interpolation processing unit interpolates the value of said first color component signal based on average value of said first color component signal of said designated pixel and said second color component signal of said pixel in the neighborhood of said designated pixel.

9. An apparatus according to Claim 7, wherein in the case where said solid-state image pickup device has a Bayer arrangement pattern of pixels corresponding to the photoelectric element with a red light transmitting filter, a pixel corresponding to the photoelectric element with a filter capable of transmitting at least the green light and a pixel corresponding to the photoelectric element with a blue light transmitting filter, and each of said pixels can be specified by the row number m of a horizontal line and the column number n of the vertical line orthogonal to said horizontal

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line of said solid-state image pickup device (m, n : arbitrary positive integer), assuming that the color signal component of said designated pixel corresponding to the photoelectric element having a filter capable of transmitting at least the green light on a horizontal line is given as $G_{m,n}$, said arithmetic means determines the value of the color component signal of said designated pixel having a filter capable of transmitting at least the green light by at least selected one of the equations $(G_{m-1,n-1} + G_{m,n})/2$, $(G_{m+1,n+1} + G_{m,n})/2$, $(G_{m-1,n+1} + G_{m,n})/2$ and $(G_{m+1,n-1} + G_{m,n})/2$.

10. An apparatus according to Claim 6, wherein said arithmetic means further includes means for determining the value of the green signal component in said pixel having the filter other than the filter for transmitting at least the green light using the value of the color component signal determined for said designated pixel having the filter for transmitting at least the green light.

~~11.~~ An image signal generating apparatus comprising a solid-state image pickup device including an arrangement of a plurality of photoelectric elements and a plurality of color filters arranged in the light receiving sections of the pixels corresponding to the photoelectric element, respectively, and an image signal processing unit for processing the color component signal obtained by said solid-state image pickup device, wherein said signal processing unit

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includes:

a memory for storing a first color component signal from a designated pixel corresponding to the photoelectric element having a filter capable of transmitting at least a green light on a line of said solid-state image pickup device, said memory storing a second color component signal from a pixel corresponding to the photoelectric element in the neighborhood of said designated pixel, said neighboring pixel having a filter for transmitting at least a green light on a line different from said designated line; and

an interpolation processing unit for interpolating the value of said first color component signal based on the value of said second color component signal.

12. A computer program product comprising:

a computer usable medium having computer readable program code means embodied therein for processing the color component signal obtained by a solid-state image pickup device having an arrangement of a plurality of photoelectric elements and a color filter arranged in the light receiving section of each of said pixels corresponding to the photoelectric element, said computer readable program code means comprising:

means for storing a first color component signal from a designated pixel corresponding to the

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photoelectric element having a filter capable of passing the green light on a line of said solid-state image pickup device in a memory device;

means for storing a second color component signal from at least one pixel in the neighborhood of said designated pixel corresponding to said photoelectric element in said memory device, the neighboring pixel corresponding to the photoelectric element having a filter for transmitting at least the green light on a line different from said designated pixel line; and

means for interpolating the value of said first color component signal based on the value of said color component signal in an interpolation processing unit.

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